

**MULTI-ACTION ON MULTI-SURFACE SEAL WITH TURBINE SCROLL  
RETENTION METHOD IN GAS TURBINE ENGINE**

ABSTRACT OF THE DISCLOSURE

5

A gas turbine engine comprises a turbine scroll inside a combustor housing, discouragers with 90-degree bending angles, a radial nozzle contacting a forward bayonet on the forward side of the turbine scroll at a bayonet engagement point and a B-width measured between the discouragers.

10 Retaining ring maintains the size of the B-width. The turbine scroll may have eight surfaces sealing at four locations and a provision to maintain constant "B-width" for the thin sheet metal scroll within the combustion system. The design allows the scroll to operate at high temperature while maintaining lowest possible thermal and mechanical stresses. It can be easily assembled with

15 excellent capability to control gas leakage and minimal component interface wearing or fretting. The gas turbine engine is adapted for aircraft, spacecraft, missiles, and other flight vehicles, especially high performance, high cycle flight vehicles.